Different variants of M-pox are spreading all over the world with various symptoms

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Abstract: Monkeypox (M-pox) is an emerging infection in Africa and outbreaks of imported cases of monkeypox sometimes happen in other countries. It is a rare disease but in recent years, it is spreading rapidly. M-pox is a viral illness, most of the time affected patients recover fully but some get very sick. The African subcontinent is the red zone for M-pox, most of the cases observed in this area. The absolute and relative change between two years is too high in these areas. In addition, it is spreading rapidly in America, Asia and the Australian region. According to various research, the clade 1 variant is more injurious for humans. According to international databases, most of the death records were observed in the African region. Until today, there is no authorized vaccine or drugs available for M-pox so prevention is the only effective solution for M-pox.

Introduction: M-pox, once referred to as monkeypox, is a virus that causes flu-like symptoms and skin blisters across the body. Usually M-pox spreads from one person to another through physical contact and by using goods of infected people. M-pox is an infectious disease. At first M-pox was discovered in 1948 when outbreaks of a pox-like disease appeared in monkeys kept on research. The first human case was recorded in 1970 in the African subcontinent. Usually M-pox occurs in central and western Africa but it has now become a headache all over the world. There is a key difference between chickenpox and M-pox, M-pox is orthopoxvirus but chickenpox is a herpes virus. Orthopoxvirus and herpes virus both of them are DNA viruses. Both of them spread through skin. Usually most people fully recover but some of them are at risk. As per United Nations health 2022 report result, M-pox is endemic in central and West Africa.

Methodology: I had used websites and World health organization (WHO) research papers for doing this research. In addition, I visited many research portals' archives to complete my research paper. Their genomic distribution is observed through various websites. Various cases observed through online news portals, newspapers, and television health programs. Various hospitals and NGOs websites are observed for various data, results, and discussion.

Result and Observation: M-pox was spreading all over the world in recent years. As our observation there are 32,063 cases in the USA, around 60-death reported in the govt report. According to the report of CDC and government authority, it shows that there are 2387 confirmed cases of M-pox until 23 Dec 2023 in Africa. The number of confirmed cases reached 6,327 at 4 Sep 2024.

Moreover, the relative change was about 165%. There were about 4,327 confirmed cases in Asia until 23 Dec. 2023 and this number increased and reached 5,403 at 4 Sep 2024. It means that the spreading level of M-pox is greater in Africa than Asia. Therefore, the relative change in Asia is about 25%. As per research data, there are 26,275 confirmed cases of M--pox in Europe. There are 38,432 confirmed cases of M-pox until December 2023 and it increased to 40,434 in North America. The relative change is about 5%. The absolute change of North America is about 2000. It indicates that the number of affected people are increasing.

In the South America region, there were about 22,838 confirmed cases and now there are about 23,809-suspected cases in the South America region. It means that the authorities of North and South America have succeeded in controlling M-pox on their continent. In the Oceania area there were about 214 confirmed cases of M-pox until December 2023 and now the confirmed cases in those areas is about 578. The relative change is about 170%, which is a headache for any country. So immediate action necessary for this subcontinent to control M-pox in a short time. As per a research of WHO and our world in data, some variant of M-pox has been discovered. Those are clade 1 and Clade 2 and the Clade 1 then differentiate by Clade 1 and Clade 1a, Clade 1b. These variants are spreading in different parts of the world, and various research organizations are working to reduce the spreading and death rate of M-pox. Clade 1 has two sub variants clade 1a and clade 1b and clade 2 has clade 2a and clade 2b.

However, most of the people are affected by the variant of M-pox known as Clade 1 with its sub variant clade 1a. Around more than 60% of people are affected by this variant.

The following table shows data of confirmed M-pox cases and death cases found throughout the world.

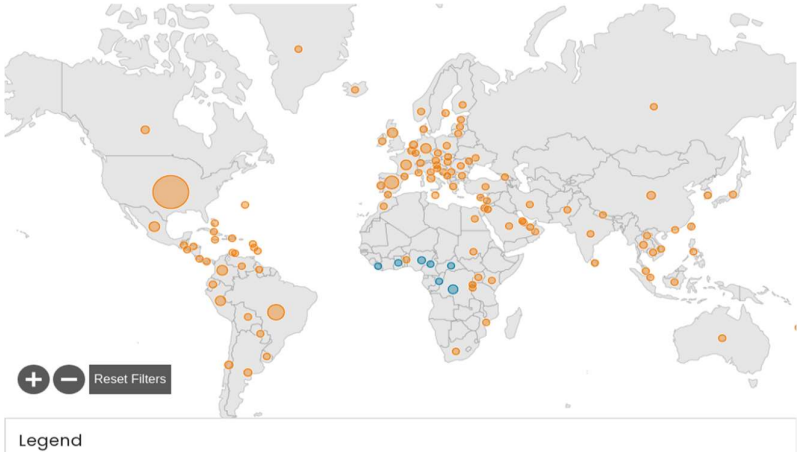
Name of the Region	**Country**	**Variants**	**Confirmed Cases**	**Death Cases**
Africa	Burundi	Clade 1 and Clade 1a	8	0
	Cameroon		35	2
	Central African Republic		213	0
	Republic of Congo		146	0
	DRC		13,791	450
	Rwanda		2	0
	Uganda		4	0

	Mozambique		1	0
	Kenya		1	0
	Cameroon	Clade 2	35	5
	Ivory Coast		28	1
	Ghana		4	0
	Liberia		5	0
	Nigeria		24	0
	South Africa		22	3
	Mozambique		1	0
Asia	Pakistan	Clade 2	1	0
	Philippines	Clade 2	1	0
	Thailand	Clade 1b	1	0
Europe	Sweden	Clade 1	1	0

As per Cleveland clinic research, there are different stages of M-pox. The stage 1 is Macule where the rash starts as flat, red spots. It lasts for 1-2 days. The second stage is Papule. On the papule stage, the spots become hard, raised bumps and it lasts for 1-2 days. The third stage is vesicle, on the stage the bumps get larger. They look like blisters filled with clear fluid and it lasts for 1-2 days. The fourth stage is Pustule, here the blisters fill with pus and it lasts for 5-7 days. The fifth stage is Scabs and here the spots crust over and become scabs that eventually fall off and it lasts for 7-14 days. Some research describes dehydration, inflammation of cornea, conjunctivitis also includes as the complication of M-pox. M-pox also can be spread by animal bites and scratches, Wild game that is cooked for food, contact of animal fluid affected by M-pox.

After exposure, it may be several days to a few weeks before you develop symptoms. There are various signs of M-pox including Fever, Rash, Swollen lymph nodes, Chills, Headache, Muscle aches, Fatigue. Not everyone with M-pox develops all the symptoms. Some people can be affected through some of these signs.

The following map shows the data about where the M-pox is spreading rapidly and which area was previously affected by M-pox and recently which areas had been marked as M-pox affected.



The following table data shows the confirmed cases of M-pox of previous and present year 2023 and 2024. It also represents data about the absolute and relative change between previous and current year throughout the world.

ID	**Confirmed Cases**		**Data Type**	
Country /Area	**Previous Year**	**This Year**	**Absolute change**	**Relative Change**
Argentina	1136	1154	+18	+2%
Aruba	3	3	+0	+0%
Australia	170	523	+353	+208%
Bahamas	3	3	+0	+0%
Barbados	1	1	+0	+0%
Benin	3	3	+0	+0%
Bermuda	1	1	+0	+0%
Bolivia	265	265	+0	+0%
Brazil	11,127	11,858	+731	+7%
Cameroon	45	50	+5	+11%
Canada	1469	1581	+112	+8%
Central African Republic	46	95	+49	+107%
Chile	1447	1449	+2	+0%
China	2025	2571	+546	+27%
Colombia	4134	4257	+123	+3%
Congo	26	47	+21	+81%
Costa Rica	226	226	+0	+0%
Cuba	8	8	+0	+0%
Curacao	3	3	+0	+0%
Democratic republic of Congo	1230	4606	+3376	+273%
Dominican Republic	52	52	+0	+0%
Ecuador	709	728	+19	+3%
El Salvador	104	104	+0	+0%
Ghana	127	127	+0	+0%
Guadeloupe	1	1	+0	+0%
Guatemala	405	405	+0	+0%
Guyana	2	2	+0	+0%
Honduras	44	44	+0	+0%
Jamaica	21	21	+0	+0%

Japan	232	248	+16	+7%
Jordan	1	2	+1	+100%
Liberia	17	25	+8	+47%
Mexico	4079	4132	+53	+1%
Mozambique	1	1	+0	+0%
Nigeria	861	916	+55	+6%
Pakistan	7	11	+4	+57%
Panama	243	245	+2	+1%
Paraguay	126	126	+0	+0%
Peru	3861	3939	+78	+2%
Philippines	9	14	+5	+56%
Saudi Arabia	652	764	+112	+17%
Singapore	50	64	+14	+28%
South Africa	5	29	+24	+480%
South Korea	155	166	+11	+7%
United Arab Emirates	25	28	+3	+12%
United States	31755	33590	+1835	+6%
Uruguay	19	19	+0	+0%
Venezuela	12	12	+0	+0%

Discussion: The table composed data about various variants of M-pox. Here we had observed a total number of confirmed cases throughout the world. According to table data, the African region is more affected by M-pox. On the other hand, the Asian subcontinent is usually less affected by M-pox. The table data shows that in South Africa the relative change is highest; it means M-pox is increasing in these subcontinent. According cases number the most cases found in the United States are around more than 31 thousand. Therefore, M-pox is now becoming a headache for them. As per table data, we can say that many countries have succeeded in controlling M-pox. Their absolute and relative change is about 0%. Death records also show that the African region is a crucial part of M-pox. Around 461 people died in the African continent. So immediate action is essential to control M-pox in African areas. As per variant data, the clade 1 variant of M-pox is spreading too much around the world. These table data had been published by observing WHO report, our world data and other such kinds of health organizations report. Around 122 locations and more than 95,000 data has been observed in the laboratory for making databases.

Identifying M-pox can be difficult because other infections and conditions can look similar like other skin diseases. So the diagnosis can become hard because we cannot identify it on time. M-pox may spread by physical contact, sexual

contact. The preferred laboratory test for identifying M-pox is detection of viral DNA by polymerase chain reaction (PCR). In the absence of skin lesions testing can be done using swabs of the throat or anus. Testing blood is not recommendable by WHO. HIV tests are offered to adults who are affected by M-pox. The diagnosis of M-pox should be done as soon as possible. The treatment of M-pox is taking care of your rash, managing pain and preventing complications. Early and supportive care must be needed for a M-pox patient. To date there is no approved antiviral for M-pox so prevention is essential for M-pox.

Conclusion: M-pox continues to be a threat today; day by day, the number of affected people are increasing. Usually M-pox can be transmitted through close contact so we need to be aware when we visit any affected patient. During pregnancy it can cause transmission to the fetus so be aware of it. Researchers and the central government should take immediate action on M-pox otherwise; it can turn into pandemic like covid-19. Vaccines and other supportive drugs should be used to prevent M-pox. In Particular, the African subcontinent must be aware about their population health issues.

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